RAILWAY JOTTINGS.

The Commissioners of Railways have issued their report, dated 1st inst. Amongst other statistical details, it states that probably one-half at least of the 4,800 miles of authorised railways, of which the works are not in progress, will never be completed under existing Acts of Parliament; that at end of last year rather more than 200,000,000*l.* had been expended on railways,—besides which companies retain power to expend, in authorised lines, about 140,000,000*l.* more, within five or six years, 50,000,000*l.* of which, however, will probably not be required; and that the average depreciation of the stock of four great lines,—the North-Western, the Great Western, the South-Western, and the Midland,—during the last two years, has been 53½ per cent. "Confidence in the managers and directors of railways," they state, "is now so generally and so justly shaken, that the commissioners consider the appointment of competent and impartial auditors, and the adoption of an uniform system of accounts and vouchers (carefully adapted to each other), indispensable to the restoration of that confidence."——The mails are now conveyed between London and Dublin within 17 hours; and when the tubular bridge across the Menai Straits is completed, another hour will be saved. The mason-work of the pier for the first of the tubes is progressing, so as to enable the tube to be placed across the straits early in June at latest. Other preparations are also being made, the tubes are nearly all ready, and the other mason work is quite finished.——The first stone of the paddock viaducts on the Huddersfield and Sheffield line was laid on Thursday week before last, "by the infant son of Mr. Fraser, resident engineer on the works." The viaducts, says the *Leeds Intelligencer*, will be a work of immense labour, and when completed, will connect the Huddersfield and Sheffield with the Huddersfield and Manchester line, in an open cutting in Spring Wood Tunnel. In order to *make way* for these viaducts, a mansion, which had been erected within the past few years at a cost it is said of 1,400*l.*, and four other large and respectable houses, have been razed to the ground.——Three individuals from Edinburgh, detained on a pleasure excursion at Burntisland till too late to proceed to their proposed destination, were lately found entitled, under a judgment of the sheriff, to repayment of the price of their tickets for the whole distance.——A new locomotive for burning anthracite or hard and ultramineralized coal, has been built in America by Hinckley and Drury, for the Fitchburg Company. It is a freight engine, and is said to "work well so far" with a heavy train.

ELECTRO-TELEGRAPHIC PROGRESS.

The hydraulic telegraph, it is said, is to be tried on a line of railway at Nottingham.——On 13th ult. the Baltimore Telegraph Company declared a dividend of 4 per cent. on the previous three months' working.——From Boston to New York, a trade circular, containing 1,300 words, was lately transmitted, and re-written, in forty-five minutes.——Some of our contemporaries of the past week have been following up and fully exonerating our previous remarks, not only on the impracticability of the present prices of our metropolitan, or rather national, company, for general utility to the public, or even for adequate profit and prosperity to the company,—but also on the prudence of centering so much power in one company as this one possesses, without some limit, restriction, or regulation by Government, such as we suggested with reference to a circumstance that occurred some time ago at Manchester. As to the former point, one contemporary says,—We called attention, in our journal of 28th April, to the outrageously extravagant terms which the Telegraph Company impose on the public, and the necessary consequence resulting from exorbitant charges, either by individual tradesmen or public Companies,—the loss of business by the former, and the indignation and neglect of the public in the latter to whatever useful purposes the company may have been established. We have since received considerable information on the charges and working of the American telegraphs; and from the smallness of the charges and the general civility and accommodation afforded in the working, all the American lines have already paid dividends exceeding those of other enterprises or of ordinary stock. No wonder that the telegraph should have made such rapid strides, or that it should be still rapidly extending, in all parts of the Union. We have before us a list of twenty-seven distinct systems of telegraphs, the longest of which is from Washington to New Orleans, a distance of 1,716 miles, and the aggregate being 6,768 miles; these are all in daily use, and several in the western states which were to have been completed last year, extend over several hundred miles.

SUPPLY OF WATER TO CONSTANTINOPLE.

The account given in a late number of The Builder, page 201, of the "Souterrazi" of Constantinople, seems to me unsatisfactory. The "Souterrazi" are rows of towers, with cisterns on the top of each, communicating through inverted syphons; and your correspondent states that this construction "relieves the hydraulic pressure on the pipes." Now any one acquainted with the principles of hydraulics must see that the pipes are relieved from an amount of pressure quite insignificant, that cannot possibly exceed the pressure of a column of water which would reach from the level of each cistern to the level of the original source. The result is, that the Turkish system, though much less expensive than an aqueduct, is much more expensive than a continuous line of pipes, over which latter system it has no adequate advantage. If your correspondent had explained how earthen pipes are made large enough to supply a great city with water, and how the joints are made tight against the unavoidable great pressure, he would have rendered an acceptable service.

The following show the greatest possible pressure at different points, on the supposition that each tower is one foot lower than the preceding tower,—and also what the pressure would be if the towers were swept away and a continuous line of pipes substituted:—

	At foot of 1st tower.	At foot of 2nd tower.	At foot of 3rd tower.
Pressure on the Turkish system	39 ft. ..	83 ft. ..	87 ft.
Pressure on continuous pipes.....	40 ft. ..	85 ft. ..	90 ft.
Difference.....	1 ft. ..	2 ft. ..	3 ft.

Spec.

METAL WORK AND ITS ARTISTIC DESIGN.

At the Society of Arts, on May 9, Mr. W. Tooke, F.R.S., in the chair, Mr. D. Wyatt, arch., read a paper on "Metal Work and its Artistic Design." He commenced with some remarks on the absolute necessity of the study of *specific* design, in order to confine the errant imaginations of artists within reasonable bounds, and in order fully to take advantage of all the natural properties, mechanical capabilities, and recorded experiences, peculiarly belonging to all materials, in the elaboration of which it is requisite that an alliance between use and beauty may be effected. The author maintained that all propriety and perfection in manufacturing design were derivable from the result of such studies,—and that the more clearly the objective individuality of every ingredient was preserved and enunciated in the finished article, the more satisfactory to both eye and mind would the character of its ornamentation appear.

The *specific design* of metal work was described as based on three great studies, a thorough knowledge of which was requisite to all who would either manufacture, compose, or criticise, in any one of its various ramifications. The first of these was that of the distinctive characteristics and appliances of each metal; the second, its form as modified by all the mechanical processes of manufacture; the third, a thorough analytical and critical acquaintance with all the best models in which reasonable and good principles of art can be traced, and through modifications of which pleasing associations of idea may be commanded at the will of the designer. In accordance with his scheme thus laid down, the author proceeded to deduce the correct theory of the manufacture of each metal, from the properties with which it had been endowed by nature. He then described, at considerable length, the process by which almost all objects in metal must be produced, dwelling on those best harmonising with the character of each substance, and the accredited conventionality of its use. Thus he emphaticised the refining, beating into sheets, wire drawing, stamping, and torsion of gold; the beating in a plate, gilding, dead silvering, parcel gilding, soldering, &c., of silver; the hollow casting of bronze by means of wax and of moulds, "*à bon creux*;" and the solid founding of iron in complex forms. Having disposed of the *structural* processes, the author rapidly analysed the decorative or superficial, enumerating and sketching out the leading peculiarities of engraving, matting, niello, cooking, burnishing, the six chief divisions of enamel, and three or four varieties of damascening. The mechanical limits of the art being thus pointed out, the impressions suggested by the history of past *chefs-d'œuvre* were then cursorily examined. The extreme antiquity of metal work, and its details among the Jews, Egyptians, Assyrians, Persians, Greeks, Etrurians, and Romans, were demonstrated from descriptions furnished by various authors, and by monuments of wonderful merit still existing. The speaker then passed over the mediæval portion of the subject, and concluded by calling attention to the examples by which he was surrounded, and urging a systematic recognition of first principles and practical details, to be superadded to the study of beauty and fine art in the abstract.

IRON STEAMERS.

Iron steamers seem now destined to carry the sway in our steam marine, not without reason, for the advantages they possess over vessels constructed of wood are manifold and momentous. They are much less susceptible of injury from getting ashore than vessels built of wood, not simply on account of the toughness and tenacity of iron, but in consequence of the plan of separating the hold into compartments, by means of water-tight bulkheads, being carried into effect with the greatest ease and efficacy. Iron vessels are much stiffer than wooden ones, not in a nautical sense, but in their capacity of resisting working and vibration. There is no play of joints, no opening and closing of seams, as in a wooden vessel; and in the case of a steamer there is scarcely any tremulous motion: there is but little smell from bilge water, no rats eating their way through the vessel, and no dry rot. There are, however, certain evils peculiar to iron vessels, though not insuperable. Some of the most conspicuous may here be enumerated. The most formidable of these by far is corrosion. Iron, when immerged in water, and especially in sea water, will rust very quickly if left unprotected, and, although its surface may be protected by a paint, yet this is not an effectual safeguard. In passing up and down rivers, and, indeed, in other situations, steamers will sometimes get aground, and the protective paint may thus be rubbed off the bottom in particular places, leaving the iron exposed. But, independent of this objection, there is another arising from the want of a soluble poison on the bottom of iron vessels, in consequence of which the bottom is liable to be covered with seaweeds and barnacles. A poisonous paint, into which arsenic has been introduced, is sometimes used as an antidote to barnacles, and operates for a time satisfactorily. But, after a certain period, the poison on the surface of the paint is all dissolved away, leaving only an insoluble stratum for the water to act upon, and the effect then is just the same as if no poison had been intermingled.

It would appear that both of these evils might be effectually prevented, if it were possible to plate the bottom of the vessel by means of the electrotype process, with a metallic alloy of arsenic and zinc; but it seems doubtful whether this could be accomplished, as the electrotype seems to show a preference for pure metals. If this cannot be done, it would suffice to work zinced plates into the bottom of the vessel, during its construction, and then to

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